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In volume III. we find *Hesperia malva* Linn. designated as the "Siebender sechsfüßiger Tagfalter mit schiefen Flügeln," etc.

"Verily, there is nothing new under the sun!"

For my part, I sympathize with all attempts to secure a fixed and simple system of nomenclature, but to revert to what were the methods of good old Dr. Jacob Christian Schaeffer in this twentieth century is not, in my opinion, the correct solution of our difficulties.

The troubles of the student of nomenclature are not, I suspect, as great as they appear to be to those who do not possess the necessary apparatus of books and who have devoted more time to questions of morphology than to questions of taxonomy. I have not at present the leisure to take up the questions involved in this discussion as I should like to do, but simply wish to remind the readers of SCIENCE that the method of numerical designations was employed nearly a century and a half ago for an extensive fauna, and that the numbers for a good many species in various genera are therefore already "preoccupied."

W. J. HOLLAND

#### SCIENTIFIC BOOKS

*Respiratory Calorimeters for Studying the Respiratory Exchange and Energy Transformations of Man.* By FRANCIS G. BENEDICT and THORNE M. CARPENTER. Published by the Carnegie Institution of Washington. 1910. Pp. 210.

This contains a full description of the latest models of respiratory calorimeters. Two are mentioned, the "chair calorimeter" designed for individuals for six- to eight-hour periods during which they can remain comfortably seated in a chair, and the "bed calorimeter" for use at night or for the sick or bed-ridden.

The measurements of heat eliminated by man as made by this apparatus are based upon the fact that the subject is enclosed in a heat-proof chamber through which a current of cold water is constantly passing. The amount of water is carefully weighed. The temperatures of the water entering and leaving the chamber are accurately recorded at frequent

intervals. The walls of the chamber are held adiabatic, thus preventing a gain or loss of heat. Thermo-electric couples connected with a galvanometer notify an observer of temperature changes of the walls. The observer then corrects this by arbitrarily cooling or heating the outer metal walls, a second cold water current accomplishing the former and electric wiring the latter, both systems being outside the inner chamber. The heat given to the first described water current circulating within the inner chamber, is exactly equal to the heat eliminated by radiation and conduction by the subject. To determine the total heat elimination, the latent heat of water vapor evaporated from the skin and lungs must also be added. The sensitiveness of this apparatus is very great. Foreigners as well as fellow countrymen have pronounced it a wonderful machine. In addition to the determination of heat elimination, the carbonic acid outgo and oxygen ingo are determined through an accessory apparatus which provides for the analysis of the circulating air.

The apparatus is costly in the first instance and requires many workers to control. In the hands of Dr. Benedict it has received notable improvements, and it is both wise and fortunate that he has had the splendid generosity of the Carnegie Institution to support his undertaking.

GRAHAM LUSK

*The Metabolism and Energy Transformations of Healthy Man during Rest.* By FRANCIS G. BENEDICT and THORNE M. CARPENTER. Published by the Carnegie Institution of Washington. 1910. Pp. 255.

This work contains a very valuable compilation of statistics obtained from observation on many normal men who had been occupants of the respiration-calorimeter of Atwater, Rosa and Benedict. As a rule records of the protein metabolism are not recorded, which leaves an important gap unfilled. The authors state that the work of Zuntz and others who used respiration apparatus of the Zuntz type is "as accurate as can be expected with apparatus of this type." The recently published work of Durig, how-

ever, shows that the results of oxygen absorption and carbondioxide elimination as determined by the Benedict calorimeter and the Zuntz apparatus are identical. There is therefore no doubt that the preeminent feature of the apparatus used by Benedict is the calorimetric determinations.

The authors find that the average heat production for fifty-five subjects during waking hours is 97.1 total calories, 1.52 per kilogram of body weight, and 49.2 per square meter of body surface, per hour. These records are 35 per cent. above the requirements in sleep. Further experiments showed an average requirement of 17.8 additional calories when a subject undressed, weighed himself and dressed again. An important generalization is that the pulse rate is more or less parallel to the total metabolism.

This book suffers very greatly from a fault that has pervaded the publications of the Nutrition Laboratory, both at Boston and at Middletown, and that is that the new discoveries are not sharply defined as separate from well-known facts. This fault occurs in Benedict's splendid monograph on "Inanition" where the one new fact, the quantitative determination of the amount of glycogen oxidized on the first and second days of fasting is passed over without emphasis.

The authors make the following statement: "A striking series of experiments has demonstrated very clearly that a change from a diet poor in carbohydrates to one rich in carbohydrates is accompanied by a considerable retention of water by the tissues of the body." This however is not an original observation, having been noted by Bischoff and Voit, fifty years ago.

The world owes a great debt to the work of the Carnegie Nutrition Laboratory and its forerunner in Middletown, which no one can gainsay. Criticism is offered in the spirit of Pflüger who held it to be the mainspring of every advance and the Altmeister adds, "deshalb übe ich es."

GRAHAM LUSK

*The Elements of the Theory of Algebraic Numbers.* By L. B. REID. New York,

The Macmillan Company. 1910. Pp. xix + 454.

The title of this book is misleading, as it treats of no algebraic numbers other than quadratic; it can not be said to present even the elements of the theory of algebraic numbers. The author devotes 150 pages to the elementary congruential properties of rational numbers and 300 pages to quadratic numbers. In view of the intimate relations between quadratic forms and the numbers and ideals of a quadratic field, the omission of an account of quadratic forms is certainly a serious defect in a book having the aims of the present one.

In a review of a book of the character of the present text, one has only to discuss questions of pedagogy. The author desires to bring out a closer relation between rational numbers and quadratic numbers. This he accomplishes by complicating the elements of rational numbers with the unnecessary machinery of quadratic numbers! We find on page 91 Wilson's theorem stated in the form

$$r_1 r_2 \dots r_k + 1 \equiv 0 \pmod{p}, \quad k = \phi(p),$$

where  $r_1, \dots, r_k$  form a complete set of residues modulo  $p$ , a prime. A similar unnecessary complication is met on page 105. Positive and negative primes  $p$  are used, so that one must face  $\phi(p) = |p| - 1$ .

On page 247 the "introduction of the ideal" should read introduction of ideals. After stating formally theorem A and devoting fifteen lines to its proof, the author informs us that the "theorem therefore fails." Similarly, on pages 250-251, theorems are formally stated and later shown "not to hold in general." This peculiar style of pedagogy is decidedly a novelty to the reviewer. It may at least serve to put the reader on his guard as to the fallibility of "what is written in the book." In the present instance the reader may be prepared for the actual error in the theory as presented on page 316, where the author makes a general theorem depend upon an equation which he has earlier proved only for a few special cases. His single reference is to the case of Gauss's field of complex